

WE CLAIM:

1. A method of controlling an operation of a switched-reluctance motor including a stator having a stator pole and a rotor having a rotor pole, said method
5 comprising the steps of:
aligning the rotor pole and the stator pole in response to a reception of an actuation command; and
cranking the rotor in a direction as dictated by the actuation command for a predetermined time period.
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2. The method of claim 1, further comprising:
rotating the rotor to a holding position upon an expiration of the predetermined time period.
- 15 3. The method of claim 2, further comprising:
minimizing any current losses of the switched-reluctance motor when the rotor is in the holding position.
- 20 4. The method of claim 2, further comprising:
minimizing any heating losses of the switched-reluctance motor when the rotor is in the holding position.
- 25 5. A method for controlling an alignment of a stator pole and a rotor pole of a switched-reluctance motor, said method comprising:
identifying a first phase of the motor as a target phase defining an initial position of the rotor pole that corresponds to the alignment of the stator pole and the rotor pole;
exciting a second phase of the motor, the second phase adjacent the first phase; and
30 subsequently exciting the first phase of the motor.

6. A method for controlling an alignment of a rotor pole of a switched-reluctance motor to a target position, said method comprising:

- identifying the target position;
- 5 aligning a phase of the motor adjacent the target position; and
- subsequently and concurrently exciting a second phase of the motor and a third phase of the motor, the second phase and the third phase being remote from the target position.

10 7. A method for controlling a rotation of a rotor of a switched-reluctance motor in a desired direction, said method comprising:

- sequentially exciting a plurality of phases of the switched-reluctance motor for one or more cycles whereby the rotor is cranked to rotate in the desired direction; and
- 15 rotating the rotor in the desired direction upon an expiration of the one or more cycles.

8. A method for controlling a minimization of any heat losses by a switched-reluctance motor having a rotor in a holding position, said method
20 comprising:

- determining the rotor is in the holding position; and
- dithering the rotor upon the rotor being in the holding position for a predetermined time period.

25 9. A method for controlling a minimization of any current losses by a switched-reluctance motor having a rotor in a holding position, said method comprising:

- determining a motor torque corresponding to the holding position;
- and
- 30 selectively reducing an ampere level of a phase current corresponding to the holding position.

10. A device for controlling an operation a switched-reluctance motor including a stator having a stator pole and a rotor having a rotor pole, said device comprising:

5 means for aligning the rotor pole and the stator pole in response to a reception of an actuation command; and

means for cranking the rotor in a direction as dictated by the actuation command for a predetermined time period.

10 11. The device of claim 10, further comprising:

means for rotating the rotor to a holding position upon an expiration of the predetermined time period.

12. The device of claim 11, further comprising:

15 means for minimizing any current losses of the switched-reluctance motor when the rotor is in the holding position.

13. The device of claim 11, further comprising:

20 means for minimizing any heating losses of the switched-reluctance motor when the rotor is in the holding position.

14. A device for controlling an alignment of a stator pole and a rotor pole of a switched-reluctance motor, said device comprising:

25 means for identifying a first phase of the motor as a target phase defining an initial position of the rotor pole that corresponds to the alignment of the stator pole and the rotor pole;

means for exciting a second phase of the motor, the second phase adjacent the first phase; and

30 means for subsequently exciting the first phase of the motor.

15. A device for controlling an alignment of a rotor pole of a switched-reluctance motor to a target position, said device comprising:

means for identifying the target position;

5 means for aligning a phase of the motor adjacent the target position;
and

means subsequently and concurrently exciting a second phase of the motor and a third phase of the motor, the second phase and the third phase being remote from the target position.

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16. A device for controlling a rotation of a rotor of a switched-reluctance motor in a desired direction, said device comprising:

means for sequentially exciting a plurality of phases of the switched-reluctance motor for one or more cycles whereby the rotor is cranked to
15 rotate in the desired direction; and

means for rotating the rotor to the holding position upon an expiration of the one or more cycles.

17. A device for controlling a minimization of any heat losses by a
20 switched-reluctance motor having a rotor in a holding position, said device comprising:

means for determining the rotor is in the holding position; and

means for dithering the rotor upon the rotor being in the holding position for a predetermined time period.

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18. A device for controlling a minimization of any current losses by a switched-reluctance motor having a rotor in a holding position, said device comprising:

30 means for determining a motor torque corresponding to the holding position; and

means for selectively reducing an ampere level of a phase current corresponding to the holding position.

19. A system, comprising:
a switched-reluctance motor including
a stator having a stator pole, and
5 a rotor having a rotor pole;
means for aligning the rotor pole and the stator pole in response to a
reception of an actuation command; and
means for cranking the rotor in a direction as dictated by the
actuation command for a predetermined time period.
- 10 20. The system of claim 19, further comprising:
means for rotating the rotor to a holding position upon an expiration
of the predetermined time period.
- 15 21. The system of claim 20, further comprising:
means for minimizing any current losses of the switched-reluctance
motor when the rotor is in the holding position.
- 20 22. The system of claim 20, further comprising:
means for minimizing any heating losses of the switched-reluctance
motor when the rotor is in the holding position.
- 25 23. A system, comprising:
a switched-reluctance motor including
a stator having a stator pole, and
a rotor having a rotor pole;
means for identifying a first phase of the motor as a target phase
defining an initial position of the rotor pole that corresponds to the alignment of the
stator pole and the rotor pole;
30 means for exciting a second phase of the motor, the second phase
adjacent the first phase; and
means for subsequently exciting the first phase of the motor.

24. A system, comprising:
a switched-reluctance motor including a rotor having a rotor pole;
means for identifying a target position of said rotor pole;
5 means for aligning a phase of the motor adjacent the target position;
and
means for subsequently and concurrently exciting a second phase of
the motor and a third phase of the motor, the second phase and the third phase being
remote from the target position.
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25. A system, comprising:
a switched-reluctance motor including a rotor;
means for sequentially exciting a plurality of phases of the
switched-reluctance motor for one or more cycles whereby the rotor is cranked to
15 rotate in the desired direction; and
means for rotating the rotor to the holding position upon an
expiration of the one or more cycles.
26. A system, comprising:
20 a switched-reluctance motor including a rotor operable to be rotated
to a holding position;
means for determining the rotor is in the holding position; and
means for dithering the rotor upon the rotor being in the holding
position for a predetermined time period.
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27. A system, comprising:
a switched-reluctance motor including a rotor operable to be rotated
to a holding position;
means for determining a motor torque corresponding to the holding
30 position; and
means for selectively reducing an ampere level of a phase current
corresponding to the holding position.